

What is claimed is:

1. An anode thin film for a lithium secondary battery having a current collector and an anode active material layer formed thereon, wherein the anode active material layer is a multiple-layer thin film comprising a silicon (Si) layer and a silver (Ag) layer.

2. The anode thin film of claim 1, further comprising a buffer layer between the current collector and the anode active material layer, the buffer layer being made of at least one selected from the group consisting of vanadium (V), nickel (Ni), molybdenum (Mo) and copper (Cu).

3. The anode thin film of claim 2, wherein the thickness of the buffer layer is in the range of 50 to 250 Å.

4. The anode thin film of claim 1, wherein the thickness of the Si layer is in the range of 50 to 250 Å and the thickness of the Ag layer is in the range of 10 to 70 Å.

5. The anode thin film of claim 1, wherein the Si layer and the Ag layer are alternately stacked.

6. The anode thin film of claim 5, wherein the Ag layer is formed between Si layers.

7. The anode thin film of claim 1, wherein the topmost layer of the multiple-layer thin film is made of Ag.

8. An anode thin film for a lithium secondary battery having a current collector and an anode active material layer formed thereon, wherein the anode active material layer is a single-layer thin film comprising silicon (Si) and silver (Ag).

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9. The anode thin film of claim 8, wherein Si and Ag comprised in the single layer are mixed in a molar ratio of 7:3 to 3:7.

5 10. The anode thin film of claim 8, further comprising a buffer layer between the current collector and the anode active material layer, the buffer layer being made of at least one selected from the group consisting of vanadium (V), nickel (Ni), molybdenum (Mo) and copper (Cu).